

# Food Consumption Survey in West Coast Santo

*Annie WALTER and Fabienne TZERIKIANTZ*

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**FOOD CONSUMPTION SURVEY IN WEST COAST SANTO  
FIELD REPORT (DRAFT)  
26 JANUARY TO 9 FEBRUARY 1998**

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## **INTRODUCTION**

Since July 1996, ORSTOM researchers have been conducting some fieldworks in three villages situated along the west coast of Santo. F. Tzerikiantz has settled there for consecutive three month periods, alternatively in Wusi area and Elia area, while A. Walter has regularly visited Wusi, Elia and Tasmate.

The main purposes of this research is to study the traditional agricultural systems and to document the techniques and practices enabling root crop cultivation. The main topics are the origine of root crops and the manipulation of their variability by local farmer (taro and yam in these areas), the diversification of root crops through subsistence cultivation, the transformation of cultural practices and the possibility of cultural intensification.

During nearly two years of study we have collected good data on wet-taro cultivation and on yam shifting cultivation in Wusi and Elia. Quantitative data on taro and yam yields, in both contexts, have also been collected.

Then we have conducted a food consumption survey in order to determine the total amount of root crops harvested and consumed for domestic purposes. The aim was to compare the root crops production with the family consumption and to point out which portion of each crop was involved in the diet. This field report is restricted to a brief analysis of the data collected during this last survey.

## **METHODOLOGY**

The survey was conducted in :

- Elia from Wenesday 28 January to Saturday 31 January 1998
- Tasmate from Monday 2 February to Tuesday 3 February 1998 and then from Thursday 5 February to Saturday 7 February
- Wusi from Thursday 5 February to Saturday 7 February

Two different types of survey were conducted in each village.

1. A village survey : the aim was to determine the amount of food which was introduced in the village area during the three or four days of the survey. Before the survey F. Tzerikiantz had drawn a village plan, numbering each household. Then, one day before the survey we held a meeting to explain to everybody the purpose of our work and ask for help and collaboration. Every household was given four numbered tickets indicating their own household number and each day of the survey. They were asked to bring them back on subsequent days.

Then, for four days, all the food brought in the village was recorded. The recording techniques were as follows :

- \* All the villagers returning from their garden brought their food at the survey point;
- \* They gave to the collector the first numbered ticket (then the second, etc...) and were recorded on a special form;
- \* All the food brought back from the garden was examined and scaled (30 kg scale)
- \* The number of the household, the nature and the weight of the food were recorded on a recording form.

This system has enabled us to follow day after day the real participation of the villagers.

2. A family survey : the aim was to determine the flux of food coming in and out a family kitchen. We selected five households in Elia, three households in Tasmate and three households in Wusi. Then three to five assistants were locally recruited (see figure 1), and trained for a day. They were supervised many times a day during the survey.

Each assistant was appointed to one kitchen during the period of the survey. This means that we recruited five people at Elia and three at Tasmate and Wusi. Each assistant was provided with a 7kg hanging scale and with daily recording forms.

The recording techniques applied daily were as follows:

- \* From sunrise to sunset each assistant, helped by members of the household, examined each bundle of food brought inside the kitchen. The food was collected either from the garden, the reef, the forest, the store or from a neighbour. The nature, the origine and the weight of the food were noted on a recording form.

- \* From sunrise to sunset each assistant examined each bundle of food going out of the kitchen. The food could be either cooked and eaten, or given to the pigs or offered to another household. The nature, the use and the weight of the food consumed in one way or another were noted on a recording form.

- \* The survey started and ended with a systematic inventory of all the products which were stocked into the kitchen before the survey or left intact in the kitchen after the survey. The nature, the origin and the weight of the products were noted on a recording form.

Every people willing to do it was given a small notebook on which he/she was invited to write the snack consumption of the day. This was done in order to evaluate the kind and the amount of food which was eaten between the main meals, as snack or collation.

### 3. The meal survey

A third survey was conducted at Elia and Tasmate but not at Wusi. This survey, by far the most difficult one to conduct, was done to determine :

- a) the amount of edible food provided by one kilo of raw crop as brought back from the garden. The various ways to prepare the food (boiled, roasted or grounded) were all explored;
- b) the quantity of food really eaten per day by each individual.

The assistants were requested to watch and record the composition and the preparation of all the meals cooked by the household during the survey. They had to scale all the ingredients used to prepare the main meals, and then to scale the individual portions of the dishes. All the information was recorded on a note book.

	Elia	Tasmate	Wusi
<b>Village survey</b>	4 days	4 days	3 days
<b>Nb of household</b>	14	11	14
<b>Nb of people</b>	69	60	47
<b>Family survey</b>	4 days	2 days	3 days
<b>Nb of household</b>	5	3	3
<b>Nb of people</b>	25	22	14
<b>Meal survey</b>	Done	Done	None
<b>Name of assistant</b>	Anna Rosil Linton Lucie	Anna Lucie Dick	Franck Manua Lothi

Figure 1 : Number of villages, household and people involved in the survey

## RESULTS

### 1. Participation to the survey and technical obstacles

Knowing that the survey was quite heavy for the villagers we did not push anyone to participate to it. However all the villagers were more than helpful and, despite some tiredness at the end, everyone did his best to facilitate the collection of data. We wish to thank particularly the families which, in the three villages, hosted an assistant, allowed him/her to scale food and helped him/her in scaling and recording! Few families were not interested to participate in the survey and were simply cancelled. When a family decided to participate they were very consistent with their choice, day after day.

In Tasmate we soon realised that two days were not enough to collect good quality data. So we left a pair of scales in the village and asked one of the assistants (Dick) to follow the survey by himself for three more days. Three or four days are an optimum length of time for this kind of survey. We could have conducted this survey for an entire week but it would have really been too disturbing for the local people.

The data were partly tabulated during the survey and we quickly realised that the quality of the information collected during the meal survey was not satisfactory. If we manage to complete the first part (estimation of the weight of edible food provided by one kilo of raw food coming from the garden), we lost hope on the second part which was to determine the consumption at an individual level. We decided to cancel this research activity at Wusi.

So, we have to point out that our results do not indicate any individual daily food consumption and therefore cannot be used from a nutritional point of view. The results indicate the amount of food used by a community, or used by a family to fulfill their needs : eating, feeding the pigs, fulfilling in social obligation.

Although the participation in the survey was excellent we think that some bundles of food were not actually scaled. It looks like root crops as taro, yam, manioc and corn were generally carried out, but green leaves, cucumber or small sea food products were generally forgotten or kept in the kitchen.

For practical reasons we could not survey the three villages at the same time. Therefore our results are somewhat biased. First the school children left the villages for boarding schools at the end of the first week of the survey. The results collected at Elia, when the children were still in the village, give higher scores than those collected at Tasmate and Wusi, after the children departure. Second, corn harvest started on the second week of the survey. So we could not have any estimation of its consumption at Elia.

The tabulation of the data collected during the village and the family surveys did not give exactly the same results. However, they were comparable for large food groups as amylaceous products. We think that the number of selected households was too small to be a representative sample. We could collect more accurate data with an improved village survey than with a family survey.

## 2. Results for Elia village (figure 2)

The quantity of vegetables, fruit and meat (or fish) cannot be evaluated with the data collected during the village survey. Family survey, held at a household level, gives better results for these food groups. However, we believe that the survey was not long enough to avoid some bias due to the normal variability of the daily meals.

It was rather difficult to find out the real pattern of daily meals. It looks like the first meal of the day takes place around half past six in the morning. Mothers cook a hot meal or offer the cold left-over of the previous day. Then, each household and often each member within a household, follows a different pattern, depending on the activity of the day. Women cook for the family when they come back from the garden whatever the hour is. Then, each member of the family would eat when coming back into the house. One day a mother would cook two or three dishes one after the other and the next day she would not cook at all but offer to the family the cold leftover of the previous day. The meals are important activities but are not formal social events. Everybody must find some food in the kitchen and be able to eat somewhere if he is hungry. Everybody, man or woman, child or adult, is able to prepare a meal.

In Elia it looks like the protein needs per day and per capita are fulfilled. Some men go to the reef everyday to catch some fish for the family. Once a week somebody goes hunting in the hinterland forest to catch wild pigs or wild cattle which is then distributed within the village community. Crayfish are taken from the nearby fresh watersprings and shellfish are regularly collected by women and children.

Vegetables are eaten in very small quantities. The results of the survey are no doubt underestimated but the total amount of leaves eaten per day and per capita does not seem to be very high (less than 100 g/day/person). At this season, the flowers of taro, cooked in coconut milk with a zest of lemon juice were a delicacy eaten daily in the village. Watercress was also consumed regularly.

Food group	Type of food	Village		Family	
		Total weight (kg)	Per capita (kg/day)	Total weight (kg)	Per capita (kg/day)
Tuber	Taro (corne)	232	0.840	66.4	0.664
	Taro (suckler)	85.5	0.308		
	Taro Fidji	102.9	0.372	63.8	0.638
	Yam	145.6	0.527	41.8	0.418
	Manioc	252.8	0.915	73	0.730
	<b>TOTAL</b>			<b>2.962</b>	
Amylaceous fruit	Banana	84.5	0.306	45.5	0.455
	Polynesian chestnut	47.1	0.170	31.1	0.331
Cereal	Corn	1.75	...	1.75	0.017
Vegetable	Green leaves	4.6	...	8.7	0.087
	Taro flower	4.3	...	1	...
	Other	6.7		3.9	0.039
Fruit	Mango	15.9		13.5	0.135
	Pineapple	1.3			
	Jackfruit			5	0.050
	Sugarcane	3.9		1.9	0.019
Protein	Fish	16	0.058	18.2	0.182
	Crayfish	4.8	0.017	4.9	0.049
	Meat		0.106	13.2	0.132
	Poultry			1.5	0.015

Figure 2 : Nature and quantity of food brought in Elia village and used at a family level during the survey

Meat and vegetable (which are often called "mit" in bislama) are always presented as accompaniment for tubers.

Small quantities of fruit are brought in the village. However, most of them are eaten between the meals, while the villagers are in the garden or in the bush. The little record books given to the villagers reveal that a wide range and quantity of fruit are regularly eaten during the day (figure 3).

The village survey shows that 2.962 kg of tubers are brought daily in the village per capita. The family survey gives an amount of 2.450 kg of tuber used daily per capita. This number does not reveal what an individual actually eats but what an individual uses per day. We estimate that the number given by the village survey is overestimated for an unknown reason.

Despite the predominance of wet taro in the area, taro consumption and manioc consumption are nearly equal. We found out that every person needs an average of 274 kg of taro per year (or 330 kg/year if we tabulate the sucklers). This number is coherent with the result of our previous survey showing that everyone cultivates an average of 315 kg of taro per year at Elia village.

Then came yam (*Dioscorea alata*) and taro Fidji. Twenty three per cent of the total amount of taro is represented by young sucklers which are profusely eaten. However wet

taro grown in the irrigated terraces of the Vunaro and the Vokei rivers provide nearly half of the Elia population diet.

The diet is supplemented by banana and Polynesian chestnut (*Inocarpus fagifer* **namambe**). This seasonal fruit is eaten daily as collation before meals. The nuts are boiled out of their pods or roasted into it.

Species	Quantity /day/per capita
Mango	3.5
Coconut	1.5
Nakatambol	1.5
Banana dessert	1.5
Golden apple ( <i>Spondias cytherea</i> )	1.5
Nut ( <i>Canarium</i> sp: <i>Barringtonia</i> sp or <i>Terminalia</i> )	3
Nagavika ( <i>Syzygium malaccense</i> )	1
Passion fruit	1
Pineapple	1
Jackfruit or corossol;	1/2
Watermelon	1/3

NB : Numbers show the number of fruit units

Figure 3 : Nature and quantity of fruit eaten during a day in Elia (January 1998)

### 3. Results for Tasmate village (figure 4)

In Tasmate the amount of food eaten per day and per capita was overestimated by the family survey. In this village, the family survey was held during two days, owing to practical difficulties. We really think that the length of time was not sufficient to provide accurate data.

The observations made in Elia are similar to the one in Tasmate : the quantity of protein food seems to be adequate; the quantity of vegetable eaten is too small to fulfill the daily metabolic needs of the body and the fruit are eaten mainly between the meals.

The daily meal pattern of the villagers is more regular in Tasmate than in Elia. The first meal of the day takes place at dawn; a light collation is eaten around 11 o'clock a.m. and the main meal is cooked in the evening and then eaten around six o'clock p.m. at night. In between, collations are taken and fruit profusely eaten.

Tasmate is an excellent example of a traditional diet based uniquely on indigenous plants. The people there rely totally on wet taro for their food and do not grow any taro Fiji nor any manioc. The staple food is supplemented by Tahitian chestnut and corn. Both are eaten daily, as collation or snacks. The total amount of tubers eaten per day and

per capita (1.622 to 1.750 kg) may be slightly underestimated at this season and has to be checked later. Rice and bread are eaten but in small quantities.

Food group	Type of food	Village		Family	
		Total weight (kg)	Per capita (kg/day)	Total weight (kg)	Per capita (kg/day)
Tuber	Taro (corme)	215.7	0.870	76.95	1.75
	Taro (cormel)	178.6	0.720		
	Yam	7.7	0.032	0	
	<b>TOTAL</b>		<b>1.622</b>		<b>1.750</b>
Amylaceous fruit	Banana	1.4		17.8	0.404
	Breadfruit	0.5			
	Polynesian chestnut	136	0.566	37	0.840
Cereal	Corn	54.6	0.227	16.1	0.365
Vegetable	Green leaves	4.65		1.2	
	Taro flower	0.3			
	Other	0.7		0.1	
Fruit	Mango	3.1		6	0.136
	Pineapple	0.7			
	Pawpaw	3.7		1	
	Nakatambol	1.3			
	Sugarcane	26.7		8.1	
Protein food	Fish	11.5	0.048	11.6	0.264
	Meat	4.65	0.019	3.6	0.082
	Poultry	1.25		(0.5 eggs)	0.011
Imported food	Rice	2		2	
	Bread			1.5	0.034

Figure 4 : Nature and quantity of food brought in Tasmate village and used at a family level during the survey

#### 4. Results for Wusi village (figure 5)

All observations made in Elia and Tasmate apply for Wusi village. The amount of meat and fish is small but sufficient, the amount of vegetable (no doubt underestimated) is inadequate and fruit are profusely eaten between meals.

The main staple food in this village is manioc, followed by taro. Taro Fidji is grown and eaten in smaller quantities. Yam, which is the main crop cultivated in the area, is underestimated at this season. The yam harvest of the previous year is now finished and new yams, expected in April/May, are not ready yet. Moreover taro is abundant in January. At Wusi the cultivation of water taro (*Colocasia esculenta*) is seasonal because the irrigation of the annual taro gardens is optimum during the wet season. Taro is planted between December and February, then harvested twelve months later. The total amount of tubers used per day and per capita reaches 2.535 kg to 2.584 kg. This diet was supplemented by corn, abundant at this time of the year. Tahitian chestnuts were not available at Wusi because the species does not grow very well there. Banana is poorly represented in our survey.



Food group	Type of food	Village		Family	
		Total weight (kg)	Per capita (kg/day)	Total weight (kg)	Per capita (kg/day)
Tuber	Taro (corme)	62.5	0.443	68.3	1.626
	Taro (cormel)	19.1	0.135		
	Taro Fidji	2.2	0.016	0	
	Yam	30	0.212	5.2	
	Manioc	250.7	1.778	33	0.785
	<b>TOTAL</b>		<b>2.584</b>		<b>2.535</b>
Amylaceous fruit	Banana	19.2	0.136	0.6	
	Breadfruit	3.2	0.023		
Cereal	Corn	90.1	0.639	10.2	0.243
Vegetable	Green leaves	3.2	0.023	0.7	
	Other	4.8	0.034		
Fruit	Mango	36.5	0.259	15.3	0.364
	Pineapple	2.7		0.9	
	Pawpaw			2.7	0.064
	Soursop			0.8	
	Sugarcane	19.2	0.136	16.1	0.383
	Watermelon	4			
Protein food	Fish	5.05	0.036	7.2	0.171
	Crayfish				
	Shellfish			3.1	0.074
Imported food	Rice			4	

Figure 5 : Nature and quantity of food brought in Wusi village and used at a family level during the survey

## DISCUSSION

### 1. The methodology

The village survey is a good technique which can be easily used to get a picture of the general food consumption of a whole community. The survey is not quite appropriate to find out the amount of vegetable, meat or fruit eaten by a community, mainly because these food groups are often forgotten by the population and are not brought toward the scales. However, the village survey gives accurate data concerning staple food as taro, yam, manioc, kumala or seasonal complementary food as corn, Tahitian chestnut or anything which can be harvested in quantity and carried back to the village in large bags.

The family survey gives more details about the consumption of leaves, meat and all food eaten in small quantities. However the methodology which was used is not totally accurate and has to be improved. An ideal survey would bring more accurate data and far less trouble for the village community.

### 2. Local tubers vs introduced tubers

The total amount of tubers used per day and per capita is similar in the village survey and the household survey, so we may reasonably conclude that our results are reliable. In Elia and Wusi everyone needs approximatively the same quantity of indigenous tubers, i.e. 1.378 kg/day/capita and 1.270 kg/day/capita respectively (figure 6). In Tasmate the consumption of local tubers is higher than in the other villages (1.712 kg/day/per capita) because the people do not cultivate introduced tubers. But the cultivation of manioc and

taro Fidji by Elia villagers allows them to have a higher amount of tuber per capita and per day than in Tasmate. In Wusi, during the present seasonal shortage of yam, the diet is also supplemented by introduced tubers.

When asked to explain why they cultivate introduced crops, the farmers said that they are easier to cultivate. Both taro Fidji and manioc can grow in poor soil, are resistant to drought, and stay under ground without problems after maturity. They are usually grown in unoccupied grounds like old cocoa orchards, old yam gardens, perimeters of gardens. So the farmers can grow more food without using ground usually devoted to traditional crops as yams or taro *Colocasia*. They can also grow more food with few extra work because taro Fidji and manioc do not need to be planted every year. It looks like the farmers use an average of 1.450 kg of traditional crops per day and per capita or 529 kg/year/capita. The annual amount of taro used per capita is approximatively 450 kg. At Elia and Wusi an average of 560 kg of introduced crops is eaten per year and per capita. The question is : is it really possible to grow a higher amount of traditional crop than the 529 kg/year/capita or have the farmers reach, with this last number, the optimum production of their local root crops ? If the latter is true, the cultivation of manioc and taro Fidji does not really compete with the cultivation of local crops. It just improves the nutritional status of the people.

### 3. Local food vs store food

Rice and bread, tin fish and tin meat are rarely eaten in the west coast communities of Santo. During the survey we have noted the consumption of one single tin fish and four kilo of rice. Increased contacts with material goods and a market economy has induced big changes in the diet of west-coast Santo populations. The relative isolation of the area has prevented them to rely on imported food.

### 4. Seasonality of food crops

However, these results have to be further discussed. First, the seasonality of food availability introduces a bias into the results. Yam especially, is in shortage in January. We suspect that, at Wusi mainly, the amount of yams will increase a lot in few months when they will be available. In Wusi, taro is available from December to February and seems overestimated in our survey.

In January, the complementary amyloseous food were Tahitian chestnut and corn, above the usual banana. Each person eats daily (during the season) an average of 550 g of one of the first two crops and an average of 250 g of banana. Moreover, a certain amount of dessert banana is eaten daily between the meals. The availability of this complementary amyloseous food is not the same for all the villages. For example, Wusi lacks Tahitian chestnut trees and has to exchange this product with nearby Kerepua. So we have to follow up the survey for a whole year to know exactly the disponibility and the seasonality of stapple food eaten in west-coast Santo communities.

### 5. From the garden to the saucepan

The second bias comes from the nature of each crop which does not give the same amount of ready-to-cook food. Taro is more advantageous than yam or manioc each giving a big left over. The lap-lap preparation using grounded tubers needs more raw crop than boiled or roasted ones. So a simplification in cooking habits, from laplap to boiled tubers, may reflect a relative shortage of tubers.

Considering peeled or grounded tubers, taro takes the first place in the daily January meals of every community in west-coast Santo (figure 6). It is followed by manioc. If we calculate the total amount of starch food (ready to cook) taken daily by one person, we find that corn, banana and Tahitian chestnut are useful complementary food. In short, we can say than approximately 2.100 kg of amylaceous food are necessary every day and for one person (figure 7).

Village	Type of preparation	Local tubers		Introduced tubers		TOTAL
		Taro	Yam	Taro Fidji	Manioc	
Elia	Unpeeled	0.906	0.472	0.505	0.822	
	<b>Total</b>	<b>1.378</b>		<b>1.327</b>		<b>2.706</b>
	Peeled	0.846	0.275	0.402	0.574	
	Grounded	0.771	0.270	0.328	0.501	
	<b>Average</b>	<b>0.808</b>	<b>0.272</b>	<b>0.365</b>	<b>0.537</b>	
	<b>Total</b>	<b>1.081</b>		<b>0.902</b>		<b>1.983</b>
Tasmate	Unpeeled	1.670				
	<b>Total</b>	<b>1.702</b>		<b>0</b>		<b>1.702</b>
	Peeled	1.443	0.022			
	Grounded	1.435	0.021			
	<b>Average</b>	<b>1.439</b>	<b>0.021</b>			
	<b>Total</b>	<b>1.460</b>		<b>00</b>		<b>1.460</b>
Wusi	Unpeeled	1.102	0.168	0.016	1.281	
	<b>Total</b>	<b>1.270</b>		<b>1.778</b>		<b>2.567</b>
	Peeled	0.937	0.115	0.013	0.894	
	Grounded	0.932	0.113	0.010	0.781	
	<b>Average</b>	<b>0.934</b>	<b>0.114</b>	<b>0.011</b>	<b>0.838</b>	
	<b>Total</b>	<b>1.048</b>		<b>0.848</b>		<b>1.896</b>

Figure 6 : Amount of tubers (unpeeled, peeled or grounded) used by day and per capita in three different villages (numbers are in kilogramme/day/per capita)

	Elia	Tasmate	Wusi
Taro	0.808	1.439	0.934
Yam	0.272	0.021	0.114
Taro Fidji	0.365	00	0.848
Manioc	0.537	00	0.838
Banana	0.206	0.272	0.092
Tahitian chestnut	0.090	0.300	00
Corn		0.150	0.200
<b>TOTAL</b>	<b>2.279</b>	<b>2.182</b>	<b>2.188</b>

Figure 7 : Total amount of amylaceous food (peeled and ready-to-cook) taken daily per capita in the three villages of our survey (numbers are given in kilogramme/day/per capita)

## 6. January sweet food

We have said that a wide range of fruit is eaten daily between the meals. However, in January, two kinds of fruits were brought back to the village.

\* Green mangos were brought back from orchards to the village where they were kept until full maturity. Mangos were particularly abundant this year and are generally

plentyfull in the dry west coast. The mango season ends up in January and the villagers collect carefully the last available fruits. An average of 100 g/day/capita was brought in Tasmate and Elia villages and an average of 300 g/day/capita was brought in Wusi.

\* Coconuts were regularly brought back from gardens or from the plantation to the villages. Green coconuts are usually drunk in gardens but dry coconuts are used for cooking. Despite the difficulty to obtain accurate data for this crop which is collected at anytime and everywhere, we have found that approximatively ten coconuts are carried back daily to the kitchen by each household.

\* Sugarcane is chewed while working in the gardens or wandering in the secondary forest. It is also used as wood to carry bundles of food and is so regularly brought back to the village. An average of 64 kg of sugarcane are eaten per capita and per year.

## 7. Summary

The tabulation and estimation of all the data for the three villages together, give the average main food eaten per year and per capita (figure 8) (intermediate results)

Food group	Food name	Availability (day)	Kg/year/capita
Starch	Taro	365	450
	Yam	240	52
	Taro Fidji	365	63
	Manioc	365	256
	Banana	365	97
	Corn	30	7.5
	Namambe	60	19
Fruit	Coconut	365	547 nuts
	Sugarcane	365	64

Figure 8 : Main food eaten by villagers, in the west coast of Santo (based on January data collection)

## RECOMMENDATIONS

1. This is a fieldwork report, giving intermediate data. We recommend not to use or quote without first cheking with the authors. However the authors would be grateful to anyone giving comments and critics of this first draft.
2. The methodology is partly satisfactory and partly not adapted to Vanuatu communities. We have to improve it.
3. Following the first results, we recommend to :
  - a) follow up the survey for at least 6 months in the three communities of the west-coast;
  - b) do the same survey at Malo where the yam is the first crop with taro Fiji
  - c) do a comparative survey in an urban environnement.
4. When the methodology becomes totally accurate and the results of complementary surveys are known, we recommend to do the same survey at a national level for all amyloseous food : Taro, Taro Fidji, Yam, Kumala, Manioc, Banana, Breadfruit, Namambe (*Inocarpus fagifer*, Tahitian chestnut), Corn, Rice, Bread. This would help to get a picture of the food habits in the different communties, and of the seasonality of this

food. Such data would be very useful in the developpement of root crops in Vanuatu. Moreover, the diet is highly seasonable in Vanuatu and any food consumption estimation has to be tabulated on a yearly based data collection.

5. We bring to your attention that manioc and Taro Fiji cultivation may be not truly competitive with local tubers cultivation. An alternate pattern may be drawn in which the two introduced tubers can fill a gap in root crop cultivation and may allow better diet for the people.

6. Sweet potato is apparently poorly represented in our survey. This tuber does not seem to be widely cultivated in west-coast Santo.

### **Acknowledgement**

We would like to thank APFT and ORSTOM which have both financialy supported the survey; the department of health in Vanuatu which kindly borrow us the hanging scales; all the people of Elia village, Tasmate village and Wusi village who have supported the survey and have helped us so much.

### **Annexe**

Edible amount of food given by 1 kg of food as brought back from the garden:

Taro : 851 g (pealed); 846 g (grounded)

Taro Fidji : 796,5 g (pealed); 650 g (grounded)

Yam : 685 g (pealed); 673 g (grounded)

Manioc : 698 g (pealed); 610 g (grounded)

Banana : 689 g (pealed after cooked); 620 g (grounded);

Namambe : 530 g (pealed)

Corn : 364 g (just seeds)